



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application Number : 10/735,857 Confirmation No.: 3185  
Applicant : Raymond J. Gorte, *et al.*  
Filed : December 16, 2003  
Title : HIGH PERFORMANCE CERAMIC ANODES  
AND METHODS OF PRODUCING THE SAME  
TC/Art Unit : 1745  
Examiner: : unknown  
  
Docket No. : 62251.000016  
Customer No. : 21967

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**INFORMATION DISCLOSURE STATEMENT**

Sir:

In accordance with 37 C.F.R. §§ 1.97 and 1.98, and in compliance with the duty of disclosure set forth in 37 C.F.R. § 1.56, applicants are submitting herewith the attached Form PTO-SB/08A (modified) for consideration and to be made of record herein by the U.S. Patent and Trademark Office in the above-captioned application. Copies of citation numbers 43-65 are including with the filing of this Information Disclosure Statement.

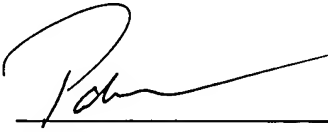
In accordance with 37 C.F.R. § 1.97(b), this Information Disclosure Statement is believed to be submitted prior to issuance of a first Office Action, and within three months of the date of the corresponding attached PCT International Search Report. Therefore, it is respectfully

submitted that no fee is required for consideration of this information. However, in the event any fee is deemed necessary, the Commissioner is authorized to charge the undersigned's Deposit Account No. 50-0206.

Respectfully submitted,

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Dated: 5/13, 2004

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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

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Examiner Name	unknown

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**U.S. PATENT DOCUMENTS**

*Examiner Initials	Cite No.	DOCUMENT NUMBER Number - Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US- 2002/0177031	11-28-2002	Doshi, et al.	
	2	US- 2002/0187389	12-12-2002	Wallin, et al.	
	3	US- 2003/0003237	01-02-2003	Seabaugh, et al.	
	4	US- 2004/0001990	01-01-2004	Ohshima, et al.	
	5	US- 3,881,957	05-06-1975	Hausler	
	6	US- 4,228,033	10-14-1980	Yamauchi, et al.	
	7	US- 4,661,422	04-28-1987	Marianowsk,i et al.	
	8	US- 5,021,921	06-04-1991	Sano, et al.	
	9	US- 5,071,718	12-10-1991	Marianowski, et al.	
	10	US- 5,306,411	04-26-1994	Mazanec, et al.	
	11	US- 5,350,641	09-27-1994	Mogensen, et al.	
	12	US- 5,543,239	08-06-1996	Virkar et al.	
	13	US- 5,589,285	12-31-1996	Cable, et al.	
	14	US- 5,591,537	01-07-1997	Bagger, et al.	
	15	US- 5,656,387	08-12-1997	Barnett, et al.	
	16	US- 5,670,270	09-23-1997	Wallin	
	17	US- 5,676,806	10-14-1997	Van Berkel, et al.	
	18	US- 5,731,097	03-24-1998	Miyashita, et al.	
	19	US- 5,937,264	08-10-1999	Wallin	
	20	US- 6,017,647	01-25-2000	Wallin	
	21	US- 6,051,330	04-18-2000	Fasano, et al.	
	22	US- 6,089,201	07-18-2000	Hubbard	
	23	US- 6,106,967	08-22-2000	Virkar, et al.	
	24	US- 6,117,582	09-12-2000	Wallin, et al.	
	25	US- 6,139,666	10-31-2000	Fasano, et al.	
	26	US- 6,156,290	12-05-2000	Lee, et al.	

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	27	US- 6,159,256	12-12-2000	Bonnville, Jr., et al.	
	28	US- 6,166,258	12-26-2000	Corbin, et al.	
	29	US- 6,183,897	02-06-2001	Hartvigsen, et al.	
	30	US- 6,209,494	04-03-2001	Manikowski, Jr., et al.	
	31	US- 6,209,508	04-03-2001	Tinney	
	32	US- 6,214,485	04-10-2001	Barnett, et al.	
	33	US- 6,218,591	04-17-2001	Lee, et al.	
	34	US- 6,221,280	04-24-2001	Anumakonda, et al.	
	35	US- 6,218,591	04-17-2001	Lee, et al.	
	36	US- 6,251,473	06-26-2001	Wang, et al.	
	37	US- 6,251,533	06-26-2001	Christiansen	
	38	US- 6,303,098	10-16-2001	Kramarz, et al.	
	39	US- 6,319,626	11-20-2001	Wallin, et al.	
	40	US- 6,458,170	10-01-2002	Visco, et al.	
	41	US- 6,468,941	10-22-2002	Bortun, et al.	
	42	US- 6,589,680	07-08-2003	Gorte, et al.	

**FOREIGN PATENT DOCUMENTS**

*Examiner Initial	Cite No.	FOREIGN PATENT DOCUMENT		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	TRANSLATION	
		Country Code:	Number - Kind Code (if known)				YES	NO
	43	JP	57-32576 A	02-22-1982	MEIDENSHA ELECTRIC MFG CO LTD		<input checked="" type="checkbox"/> abst	<input type="checkbox"/>
	44	JP	1007475	01-11-1989	MITSUBISHI HEAVY IND. LTD.		<input checked="" type="checkbox"/> abst	<input type="checkbox"/>
	45	EP	0338823	10-15-1989	TOA NENRYO KOGYO KABUSHIHK KAISHA		<input checked="" type="checkbox"/>	<input type="checkbox"/>
	46	DE	101 18 651 A1	10-24-2002	DAIMLERCHRYSLER AG		<input type="checkbox"/>	<input checked="" type="checkbox"/>
	47	WO	00/13791	03-16-2000	ANGLO AMERICAN RESEARCH LABORATORIES		<input checked="" type="checkbox"/>	<input type="checkbox"/>

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**OTHER DOCUMENTS - NON-PATENT LITERATURE DOCUMENTS**

*Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	TRANSLATION	
			YES	NO
	48	R.J. Gorte, et al. "Anodes for Direct Oxidation of Dry Hydrocarbons in a Solid-Oxide Fuel Cell," <i>Advanced Materials</i> , (2000), pp. 1465-1469	<input type="checkbox"/>	<input type="checkbox"/>
	49	K. Eguchi, et al., "Electrical properties of ceria-based oxides and their application to solid oxide fuel cells," <i>Solid State Ionics</i> , 52, (1992), pp. 165-172	<input type="checkbox"/>	<input type="checkbox"/>
	50	Mogens Mogensen, et al. "Physical Properties of Mixed Conductor Solid Oxide Fuel Cell Anodes of Doped CeO <sub>2</sub> ," <i>J. Electrochem. Soc.</i> , Vol. 141, No. 8, August 1994, pp. 2122-2128	<input type="checkbox"/>	<input type="checkbox"/>
	51	E.S. Putna, et al. "Ceria-Based Anodes for the Direct Oxidation of Methane in Solid Oxide Fuel Cells", <i>J. Electrochem. Soc.</i> Vol. 11, No. 12, (1995), pp. 4832-4837	<input type="checkbox"/>	<input type="checkbox"/>
	52	R.T. Baker, et al. "Evaluation of perovskite anodes for the complete oxidation of dry methane in solid oxide fuel cells", <i>Solid State Ionics</i> 72, (1994), pp. 328-333	<input type="checkbox"/>	<input type="checkbox"/>
	53	K. Asano, et al. "Novel Solid Oxide Fuel Cell System Using the Partial Oxidation of Methane", <i>J. Electrochem Soc.</i> , Vol. 142, No. 10, October 1995, pp. 3241-3245	<input type="checkbox"/>	<input type="checkbox"/>
	54	Yoshiko Hiei, et al. "Partial Oxidation of methane for internally reformed solid oxide fuel cell", <i>Solid State Ionics</i> , 86-88 (1996), pp. 1267-1272	<input type="checkbox"/>	<input type="checkbox"/>
	55	Calvin H. Bartholomew "Carbon Deposition in Steam Reforming and Methanation", <i>Catalysis Reviews-Sci. Eng.</i> , 24(1), pp. 67-112, (1982)	<input type="checkbox"/>	<input type="checkbox"/>
	56	T. Kawada, et al. "Electrical properties of transition-metal doped YSZ", <i>Solid State Ionics</i> , 53-56 (1992), pp. 418-425	<input type="checkbox"/>	<input type="checkbox"/>
	57	Tsepin Tsai, et al. "Effect of Mixed-Conducting Interfacial Layers on Solid Oxide Fuel Cell Anode Performance", <i>J. Electrochem. Soc.</i> , Vol. 145, No. 5, May 1998, pp. 1696-1701		
	58	Hibiki Itoh, et al, "Configurational and Electrical Behavior of Ni-YSZ Cermet with Novel Microstructure for Solid Oxide Fuel Cell Anodes", <i>J. Electrochem. Soc.</i> , Vol. 144, No. 2, February 1997, pp. 641-646		

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			YES	NO
	59	Hibiki Itoh, et al. "Improved Microstructure of Ni-YSZ Cermet Anode for SOFC with a Long Term Stability", <i>Electrochemical Soc. Japan</i> , 64, No. 6, (1996), pp. 549-554		
	60	Mogens Mogensen, et al. "Kinetic and geometric aspects of solid oxide fuel cell electrodes", <i>Solid State Ionics</i> , 86-88 (1996) pp. 1151-1160		
	61	R. T. K. Baker "Catalytic Growth of Carbon Filaments", <i>Carbon</i> , Vol. 27, No. 3, pp. 315-323, (1989)	<input type="checkbox"/>	<input type="checkbox"/>
	62	Haytham Alqahtany, et al. "Methane Steam Reforming Over Fe Electrodes in a Solid Electrolyte Cell", <i>Energy &amp; Fuels</i> , (1993), 7, pp. 495-504	<input type="checkbox"/>	<input type="checkbox"/>
	63	N.M. Sammes, et al. "Synthesis and properties of dense nickel and cobalt zirconia cermet anodes for solid oxide fuel cells", <i>Journal of Materials Science (UK)</i> , Vol. 31, No. 22, pp. 6069-6072, 15 Nov. 1996	<input type="checkbox"/>	<input type="checkbox"/>
	64	M. Watanabe et al. "High Performance Catalyzed-Reaction Layer for Medium Temperature Operating Solid Oxide Fuel Cells", <i>J. Electrochem. Soc.</i> , Vol. 141. No. 2, pp. 342-346, Feb. 1994	<input type="checkbox"/>	<input type="checkbox"/>
	65	PCT International Search Report, date of mailing 19 April 2004 (PCT/US03/39931)	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>

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